

Brain Implants Market- Market Insights, Competitive Landscape and Market Forecast–2026

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Abstracts

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Brain/Cranial Implants Market By Product Type (Customized And Non-Customized), By Material (Titanium, Peek, And Others), By End-User (Hospitals And Specialty Clinics), by geography is expected to grow at a steady CAGR forecast till 2026 owing to rising technological advancements and increasing prevalence of brain cancers

Global Brain/Cranial Implants Market was valued at USD 1.03 billion in 2020, growing at a CAGR of 6.10% during the forecast period from 2021 to 2026 to reach USD 1.47 billion by 2026. The demand for brain/cranial implants is primarily being boosted by the rising number of trauma cases, increasing prevalence of brain cancers, technological advancement in product development, and growing prevalence of brain aneurysms, among other factors.

Brain/Cranial Implants Market Dynamics:

The brain/Cranial implants market is witnessing growth due to their increasing demand owing to the growing number of trauma cases, brain cancers, and subsequently the increase in the number of craniotomy and cranioplasty procedures. Cranial implants are medical devices that are used to secure intracranial structures, normalize cerebral hemodynamics, reconstruct the skull contour, and repair cranial defects. These devices are placed usually after craniotomy and cranioplasty procedures.

Cranial defects is an umbrella term that encompasses various indications- trauma, malignant tumors (olfactory neuroblastoma, eosinophilic granuloma, osteoma among others), external decompression of intracranial hypertension, congenital malformations

(xraniosynostosis, meningoencephalocele) among others. According to the data published by the GLOBOCAN 2020, in 2020, there were about 308,102 new cases of brain and nervous system cancers across the globe.

Craniosynostosis is one of the commonest malformations in children which usually presents during the first year of life. In the healthy population, the metopic suture (also known as the frontal, interfrontal, or median frontal suture) is a vertical fibrous joint that divides the two halves of the frontal bone and is present in a newborn) closes between 6 and 12 months of age, while the other cranial sutures remain open until adulthood. Premature closure of one or more sutures often results in cranial deformity and compromised intracranial volume. The latter may result in raised intracranial pressure and secondary brain injury. As per an article published by Betances, Mendez, and Das “Craniosynostosis” (2020), the trend in the prevalence of craniosynostosis is one per 2000 to one per 2500 live births.

As per a study published by Brazinova et al in 2021 titled “Epidemiology of Traumatic Brain Injury in Europe: A Living Systematic Review”, for all ages and TBI severities, crude incidence rates ranged from 47.3 per 100,000 to 694 per 100,000 population per year (country-level studies) and 83.3 per 100,000 to 849 per 100,000 population per year (regional-level studies) for available data up to 2015 in Europe. Additionally, according to the study conducted by Kuehn titled “head injury deaths on the rise”, published in 2020, the national rate of traumatic head injury in the brain injury deaths due to falls increased from 3.86 to 4.52 per 100,000 population between 2008 and 2017.

In several neurosurgical procedures, such as decompressive hemicraniectomy or tumor resection, the skull is opened temporarily in order to expose the brain. Decompressive hemicraniectomy is performed on patients suffering from conditions associated with raised intracranial pressure, resulting from e.g. traumatic brain injury or stroke. In decompressive hemicraniectomy, part of the skull is removed in order to decrease intracranial pressure. These surgical procedures are often followed by a cranioplasty, in which the bone defect is reconstructed by autologous bone or a cranial implant

Cranial bone defects can heavily affect a patient's life quality. Such defects can originate from infections of the calvaria, from heavy craniofacial traumas such as sport and road accidents and other physical assaults, or occur due to congenital craniofacial deformities or as side effects after neurosurgical or maxillofacial procedures.

Moreover, technological advancements such as computer-aided design and

3-dimensional (3-D) printing are leveraging other advances in regenerative medicine. It is now possible to 3-D-print patient-specific implants using a variety of polymer, ceramic, or metal components. These implants can be as per the anatomy of the patient and offer advantages such as contours can be perfectly restored, resulting in superior cosmetic results. This is especially important for large defects. Second, the customized implants help in the reduction of the operating room time as less time is required for insertion of the implant.

Therefore, the rising prevalence of brain trauma injuries and brain tumors which necessitate the need for cranioplasty and craniotomies, coupled with technological advancements such as additive manufacturing are expected to contribute to the brain/cranial implants market growth.

However, the non-availability of the required healthcare infrastructure as well as skilled professionals in developing economies, the high cost of implants and procedures, and the risk associated with surgical procedures may prove to be certain restraints to the brain/cranial implants market growth.

Brain/Cranial Implants Market Segment Analysis:

Brain/Cranial Implants Market by Product Type (Customized and Non-Customized), Brain/Cranial Implants market by Material (Titanium, Peek, and Others), Brain/Cranial Implants market by End User (Hospitals and Specialty Clinics), and Brain/Cranial Implants market by Geography (North America, Europe, Asia-Pacific, and Rest of the World)

In the product segment of the brain/cranial implants market, customized cranial implants are expected to account for the larger market share. Customized cranial implants, also known as patient-specific implants are designed specific to the patients wherein the patient's cranial anatomical model which is from CT scan images is used as the template. These implants, therefore, help in ensuring stable fixation and restoring aesthetic cranial symmetry as they are specifically designed to fit the patient's anatomy thereby covering the whole surface area of the cranial defect. Furthermore, these implants offer better functionality, decreased surgery duration, and facilitate healing time compared to the non-customized cranial implants.

Among all the regions, North America is expected to account for the largest share in the brain/cranial implants market. The growing number of traumatic brain injuries, access to better healthcare infrastructure along the presence of major market players in the region

are predicted to be the major influencing factors in driving the overall growth of the brain/cranial implants market over the forecast period.

North America is expected to dominate the Overall Brain/Cranial Implants Market:

As per the latest facts provided by the Centers for Disease Prevention and Control (CDC), in 2019, traumatic brain injury (TBI) accounted for nearly 61,000 TBI-related deaths. Furthermore, a study published by Georges and Das (2020) reported that on average, in the United States, around 1.7 million people suffer TBI with older adolescents (ages 15 to 19 years) and older adults (ages 65 years and older) among the most likely to sustain a TBI.

Additionally, according to the data provided by the Brain Aneurysm Foundation (2021), approximately 30,000 people in the country suffer from a brain aneurysm rupture each year. In another set of data provided by the American Cancer Society, in 2021, it has been estimated that approximately 24,350 malignant tumors of the brain or spinal cord may occur in the US. It is also estimated that in 2021, approximately 18,600 people are expected to succumb to the brain and spinal cord tumors in the country. All these above-mentioned statistics pertaining to specific indications point towards the increasing need for cranioplasty and craniotomy procedures, which are employed in opening up the brain by removing the part of the skull for easy access to the target site.

Moreover, the well-established healthcare infrastructure in the country which can be supported by the high per capita healthcare expenditure in the country with extensive reimbursement programs covering the costs for the cranial implants further encourages people to opt for such procedures and devices.

In August 2021, OssDsign, a global manufacturer of reconstructive implant solutions entered into an agreement with Red One Medical which is a private sector entity of medical innovation for the Department of Defense and Department of Veteran Affairs to provide reconstructive cranial solutions to US veterans and military members. The Veterans Health Administration is the largest integrated healthcare system in the country encompassing about 1,300 healthcare facilities that are involved in serving 9 million veterans in the US.

Therefore, considering the parameters mentioned above coupled with factors such as collaborations and agreements between device manufacturers and insurance groups in the country, the market for brain/cranial implants looks promising in the United States and North America.

Brain/Cranial Implants Market Key Players:

Some of the key market players operating in the brain/cranial implants market include Stryker, Zimmer Biomet, DePuy Synthes (Medical Devices Business Services, Inc.), Medtronic, KELYNIAM GLOBAL INC, B. Braun Melsungen AG, Jeil Medical Corporation, Longeviti Neuro Solutions LLC, MedCAD, Xilloc Medical Int B.V., Ortho Baltic, Medartis AG, KLS Martin Group, 3di GmbH, Synimed Synergie Ingénierie Médicale S.A.R.L., OssDsign AB, and others.

Recent Developments Activities in the Brain/Cranial Implants Market:

In January 2021, Longeviti Neuro Solutions received the 510k clearance from the US Food and Drug Administration for their ClearFit cranial implant for postoperative ultrasound imaging. The Longeviti ClearFit implant is a neuro reconstructive implant that surgeons use to reconstruct a patient's cranium.

In September 2020, OssDsign AB received patent coverage from the United States Patent and Trademarks Office (USPTO) for the implant design for OssDsign Cranial PSI. The company had previously received the patent in Europe, Japan, and Australia previously.

In May 2019, Kelyniam Global Inc. received the 510k for their product Customized Craniofacial Implant (CCI), Customized Skull Implant (CS) which is intended to fill a bony defect or void in a patient's specific craniofacial and cranial skeleton.

Key Takeaways from the Brain/Cranial Implants Market Report Study:

Market size analysis for current brain/cranial implants market size (2020), and market forecast for 5 years (2021-2026)

The effect of the COVID-19 pandemic on this market is significant. To capture and analyze suitable indicators, our experts are closely watching the brain/cranial implants market.

Top key product/services/technology developments, merger, acquisition, partnership, joint venture happened for last 3 years

Key companies dominating the Global brain/cranial implants market.

Various opportunities are available for the other competitor in the brain/cranial implants market space.

What are the top-performing segments in 2020? How these segments will perform in 2026.

Which are the top-performing regions and countries in the current brain/cranial implants market scenario?

Which are the regions and countries where companies should have concentrated on opportunities for brain/cranial implants market growth in the coming future?

Target Audience who can be benefited from this Brain/Cranial Implants Market Report Study:

Brain/Cranial Implants products providers

Research organizations and consulting companies

Brain/Cranial Implants-related organization, association, forum, and other alliances

Government and corporate offices

Start-up companies, venture capitalists, and private equity firms

Distributors and Traders dealing in brain/cranial implants

Various End-users want to know more about the brain/cranial implants market and the latest technological developments in the brain/cranial implants market.

Frequently Asked Questions for Brain/Cranial Implants Market:

What is are Brain/Cranial Implants?

Brain/Cranial implants are medical devices that are used to secure intracranial structures, normalize cerebral hemodynamics, reconstruct the skull contour, and repair cranial defects.

What is the market for Global Brain/Cranial Implants?

Global Brain/Cranial Implants Market was valued at USD 1.03 billion in 2020, growing at a CAGR of 6.10% during the forecast period from 2021 to 2026 to reach USD 1.47 billion by 2026.

What are the drivers for the Global Brain/Cranial Implants Market?

The major factors driving the demand for Brain/Cranial Implants in the market are the increase in the number of trauma cases, the rising prevalence of brain cancers as well as brain aneurysms, and the development of safer and effective implants.

What are the key players operating in Global Brain/Cranial Implants?

Some of the key market players operating in the brain/cranial implants market include Stryker, Zimmer Biomet, DePuy Synthes, Medtronic, KELYNIAM GLOBAL INC, B. Braun Melsungen AG, Jeil Medical Corporation, Longeviti Neuro Solutions LLC, MedCAD, Xilloc Medical Int B.V., Ortho Baltic, Medartis AG, KLS Martin Group, 3di GmbH, Synimed Synergie Ingénierie Médicale S.A.R.L., OssDsign AB, and others.

What region has the highest share in the Brain/Cranial Implants market?

North America is expected to hold the highest share in the revenue in the Brain/Cranial Implants market during the forecast period. This can be attributed to the high number of cases of traumatic brain injuries, presence of major market players in the region coupled with better healthcare system in the region, primarily in the US.

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